

Atty. Docket No. YOR920010266US2  
(590.071)

**REMARKS**

In the Office Action dated January 11, 2005, pending Claims 1-15 were rejected and the rejection made final. Claims 1, 8, and 15 are Independent Claims; the remaining claims are dependent claims. In response Applicants filed an Amendment After Final which was not entered. Applicants are now filing a Second Amendment After Final in which Independent Claims 1, 8, and 15, and dependent Claims 2-6 have been rewritten. This Second Amendment After Final will address all of the formal issues raised by the Examiner, as well as discussing the inapplicability of any prior art based rejections. Applicants intend no change in the scope of the claims by the changes made by this amendment. It should be noted these amendments are not in acquiescence of the Office's position on allowability of the claims, but merely to expedite prosecution.

Applicants and the undersigned are most grateful for the time and effort accorded the instant application by the Examiner. On July 8, 2005, Applicants' counsel conducted a telephone interview with Examiner's Supervisor as the Examiner was out of the office. The present application, including the specification, drawings, and claims, was discussed in reference to the Advisory Action mailed June 26, 2005. While no agreement was reached with respect to the allowance of the present application, it was agreed upon that Applicant would submit a Second Amendment After Final, and the application would again be discussed by Applicant's counsel and the Examiner's Supervisor on the following Monday, July 11, 2005.

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The Office is respectfully requested to reconsider the outstanding rejections and objections. Each objection or a potential rejection presented in the Advisory Action will now be discussed.

#### **Objections to the Disclosure**

The disclosure stands objected to because the Office asserts three paragraphs of the disclosure contain an embedded hyperlink or other form of browser executable code. The unentered Amendment After Final proposed to amended only one of the three paragraphs. As noted in the Advisory Action, the objectionable language in all three paragraphs needed to be addressed. This Second Amendment After Final amends all three objectionable paragraphs to remove any embedded hyperlinks. Reconsideration and withdrawal of this objection is respectfully requested.

#### **Objections to the Drawings**

The drawings are objected to under 37 CFR 1.83(a) for failing to show every feature of the invention specified in the claims. For the convenience of the Office, a copy of the formal drawings previously submitted and accepted is enclosed herewith.

The drawings, as clarified below, show that they feature the necessary limitations of the claims of the instant invention. In the Advisory Action dated June 26, 2005, the Examiner explicitly listed features of the claims that she found not to be depicted in the formal drawings submitted with the application. Specifically, these features include: **identifying, graph, assigning, integer numbers, nodes, precluding, pointers, maintaining, accessing, paging access scheme, avoiding, and reference counts.** The

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drawings of the present invention depict each of the features listed above thought necessary to properly depict the instant invention.

Specifically, Figure 1 depicts the **graph** and the **nodes** as they would occur in computer memory. This depiction may be considered non-traditional since graphs are generally thought of circular shaped nodes connected by lines or arrows. However, it is still a valid and thorough depiction of the **graph** and the **nodes** of the **graph**. The end of the **graph** is depicted by the "nextfree" **node**, which indicates where in the **graph** the next new **node** would be connected. As can be seen in Figure 1, each **node** of the **graph** is assigned an **integer number** that identifies the **nodes**. For example, the first node is assigned the integer 0; the second node is assigned the integer 1, and so on. In Figure 1, three **nodes** are **identified**; in other Figures, more or fewer nodes may be identified. The "old" and "young" ends of the graph, as well as the integer numbers assigned to the nodes, show the **partial order** of the nodes. Additionally, in Figure 3, the **partial order** of the nodes is **maintained** through the process of garbage collection, as is evident in the renumbering of the nodes. Thus, as can be seen above, the features, including **identifying, graph, assigning, integer numbers, nodes, and maintaining**, are depicted in the drawings associated with the instant invention.

With regards to the features of **accessing** and **paging access scheme** mentioned by the Examiner, these features are well-known in the art and thus are not deemed necessary to be depicted in the drawings. MPEP Section 602.08 explicitly states "[t]he applicant shall furnish a drawing where necessary for the understanding of the subject

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matter to be patented.” The depiction of well-known features in the art is not necessary for the understanding of the subject matter to be patented.

With respect to the other features mentioned by the Examiner, i.e., **precluding, pointers, avoiding, and reference counts**, it is somewhat counter-intuitive and illogical to include these features in the drawings. The specific claims that are associated with the features recite limitations in which the instant invention is configured to result in **“precluding the use of pointers” and “avoid the use of reference counts”**. Thus, the instant invention does not use pointers or reference counts. To include those features in the drawings would be counter-intuitive and illogical, and also confusing, to those persons looking at the drawings. One would be unsure whether or not pointers and reference counts were a necessary part of the present invention. Thus, to be clear, these features are intentionally left out of the drawings.

#### **Rejection of the Claims**

As noted above, Claims 1-15 were pending in the instant application at the time of the outstanding Advisory Action. Claims 1, 8, and 15 are Independent Claims; the remaining claims are dependent claims. Independent Claims 1, 8, and 15, and dependent Claims 2-6 have been have been rewritten. Applicants respectfully submit the Section 112, Second Paragraph, issues are now obviated and there are no outstanding prior art rejections.

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***Section 112, Second Paragraph, Issues***

The continuation sheet of the Advisory Action disclosed the Examiner's concern over the claim language in Claims 1-7, stating that the claims had to be further considered under 35 USC 112, second paragraph. The claims have been amended to address this concern. The language "configured to" rather than "being adapted to" has been used. This language has previously been approved by the Office, including the Examiner's Supervisor, in U.S. Patent No. 6,912,706.

***Possible Prior Art Issues***

Applicants believe there are no outstanding prior art issues with respect to the claims as they appear in this Second Amendment After Final. In the Advisory Action dated June 26, 2005, no mention is made of any art rejections that may be pertinent to the current invention. The reason for the this lack of mention of art rejections becomes apparent in reviewing the prosecution history.

In summary, an art rejection was made in the Office Action dated November 3, 2003. The claims were amended by the Amendment dated April 20, 2004, to address the art rejection. In the next Office Action dated July 26, 2004, no art rejection was interposed against the amended claims, however, an enablement objection was made against the amended claims. Rather than argue the enablement rejection at that time, the claims were amended and in the next Office Action dated January 11, 2005, the art rejection was again made. The proposed amendments made both in the unentered Amendment After Final dated June 13, 2005 and in this Second Amendment After Final

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return the claim language in question to as it appeared in the April 20, 2004, Amendment. The June 13, 2005, Amendment After Final addressed the enablement rejection and the inapplicability of any prior art rejection. As discussed below and agreed in the subsequent Advisory Action, this claim language is enabled by the specification. Moreover, the Examiner made no mention of any art rejection, either new or previously imposed, in the Advisory Action.

In an earlier filing of the claims, as well as the currently amended filing of claims, Independent Claims 1, 8, and 15 recite that "at least a partial order among the nodes is maintained". In the non-final Office Action dated July 26, 2004, presented in the prosecution of this application, the Office rejected this limitation under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office asserted that the limitation was not enabled in the specification of the application. The Office stated that disclosure only existed for a strict order. The prior art cited in the rejections (including Biere and Biliris) against the application in this Office Action also did not address this limitation, nor did it address any limitation regarding the ordering of the nodes. For further information of the enablement of the claim limitation, please see the Amendment dated June 13, 2005. The Applicant respectfully submits that not only is this limitation enabled in the specification of the application, but that it is also a novel feature of the application and places the independent claims in condition for allowance.

As best understood, both Biere and Biliris disclose a package including an arrangement for identifying at least two nodes in a graph, assigning integer numbers to

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different nodes, and maintaining an order among the nodes. In an Office Action dated January 11, 2005, the Examiner explicitly stated areas in each of the pieces of prior art which dealt with the ordering of the nodes. However, each of these sections fails to disclose a partial order among the nodes. While discussing the Biere reference as an art rejection, the Examiner states in Page 5 of the **Response to Arguments** Section of the Action: "Regarding the Biere reference, a stack is disclosed, which is an organized arrangement, thus, it is considered that an order among the nodes would be maintained by definition." However, a stack does not necessarily maintain a partial order among the nodes, and nowhere in the Biere reference is there any teaching or suggestion that a partial order among the nodes is maintained. Further, the Biere reference also indicates that the "nodes are stored directly in one gigantic hash table." (Paragraph 5) A hash table, as is well-known in the art, does not support a partial order among the nodes. In the same discussion, the Examiner also states: "Regarding the Biliris reference, a sequence is disclose, which is an order of succession, thus, it is considered that an order among the nodes would be maintained by definition." (Page 6, First Paragraph) However, the areas of the Biliris paper that are referenced by the Examiner disclose segment allocation, and do not specifically deal with the nodes, or the ordering of the nodes, of a BDD graph.

These disclosures do not meet the limitations of the claims in its current state. The limitation of maintaining a partial order among the nodes is not met by a sequence, nor is it met by a stack. A partial order among the nodes entails a binary relation between the nodes that meets certain mathematical properties, such as reflexivity, transitivity, and symmetry. A stack and a sequence do not necessarily meet such properties, and there is

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no teaching or suggestion in either Birilis or Biere that such properties are met by their respective node ordering. Thus, the order of the nodes in Biere and Birilis is in stark contrast to the present invention, in which **at least a partial order is maintained among the nodes.**

It is respectfully submitted that as previously recognized by the Office, the applied art clearly falls short of present invention in that the applied art does not disclose or suggest maintaining "at least a partial order among the nodes". Accordingly, Applicant respectfully submits that the applied art does not anticipate the present invention because, at the very least, "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under construction." W.L. Gore & Associates, Inc. v. Garlock, 721 F.2d 1540, 1554 (Fed. Cir. 1983); see also In re Marshall, 198 U.S.P.Q. 344, 346 (C.C.P.A. 1978).

In view of the foregoing, it is respectfully submitted that Claims 1, 8, and 15 fully distinguish over the applied art and are thus in condition for allowance. By virtue of dependence from what are believed to be allowable independent Claims 1, 8, and 15, it is respectfully submitted that Claims 2-7, and 9-14 are also presently allowable.

### **Conclusion**

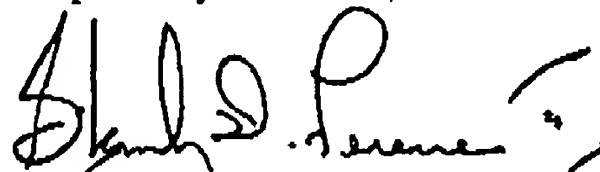
Thus, the amendments made to the claims overcome all art issues presented by the Examiner, and additional amendments have been made to address any confusion as to claim language that may occur with respect to USC 112, second paragraph. Further, all issues concerning the specification and the drawings have been addressed in this



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amendment. Thus, it is respectfully submitted that the present invention is currently in condition for allowance. Notice to the effect is hereby earnestly solicited. If there are any further issues in this application, the Examiner, and the Examiner's Supervisor, is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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